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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte BERNHARD KERN

Appeal 2008-0655
Application 09/862,803
Technology Center 1700

Decided: January 10, 2008

Before BRADLEY R. GARRIS, THOMAS A. WALTZ, and
KAREN M. HASTINGS, *Administrative Patent Judges*.

HASTINGS, *Administrative Patent Judge*.

DECISION ON APPEAL

1Appellant appeals under 35 U.S.C. § 134(a) from the Examiner's final rejection of claims 1-7, which are the only claims pending in this application. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

I. BACKGROUND

The invention relates to a method of producing light metal castings composed of magnesium or magnesium alloys. Claim 1 is illustrative:

> 1. A method of producing light metal castings composed of magnesium or magnesium alloys, comprising the steps of supplying a liquid metal first to a casting retort; pumping gas under pressure into the casting retort so as to press the liquid metal into a preliminarily evacuated casting mold; performing a production process continuously without interruption of individual casting process with a pressure differential between the casting retort and the casting mold; heating of the liquid metal in a lower part of a melting device which adjoins a feed system; after reaching a melting temperature approximately 630˚, providing a connection between said casting retort and said casting mold through a valve system over a short time without connection with outside; selecting a quantity of the supplied liquid light metal to be a multiple of a quantity of the light metal required for each light metal casting so as to compensate losses of a quantity of the light metal in said casting retort; performing a transformation of the liquid metal from a melting condition with a temperature of approximately 630˚C to a solidification condition; and supplying and withdrawing a protective gas by a differential pressure system.

The Examiner relies upon the following references as evidence of unpatentability:

Jorn	4,205,721	Jun. 3, 1980
Sugiura (as translated)	JP 63-268,559	Nov. 7, 1988
Blum	5,280,847	Jan. 25, 1994
Muller	5,294,096	Mar. 15, 1994
Callihan	5,358,027	Oct. 25, 1994
Braun (as translated)	DE 44 31 865 A1	Mar. 14, 1996

Claims 1-7 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-7 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Braun in view of Callihan and further in view of either Jorn, Blum, Muller or Sugiura.

Appellant does not separately argue with any reasonable specificity the individual claims rejected under 35 U.S.C. § 103(a) (Br. 18). Therefore, we select the broadest independent claim 1 to decide this issue on appeal regarding claims 1-7.

ISSUES ON APPEAL

The first issue is whether Appellant has shown that the Examiner erred in determining that claims 1-7 fail to comply with the requirements of 35 U.S.C. § 112, second paragraph.

For the reasons that follow, we determine that the Examiner has established a prima facie case that these claims fail to comply with 35 U.S.C. § 112, second paragraph.

The second issue is whether the Appellant has shown that the Examiner reversibly erred in rejecting all the claims as unpatentable under 35 U.S.C. § 103 over the applied references.

For the reasons that follow, we determine that the Examiner has established a prima facie case of obviousness in view of the reference evidence, which prima facie case has not been adequately rebutted by Appellant's arguments.

Accordingly, we AFFIRM the rejections, under 35 U.S.C. § 112, second paragaph, and 35 U.S.C. § 103, presented in this appeal essentially for the reasons stated in the Answer, as well as those reasons set forth below.

Thus, the decision of the Examiner to reject the claims on appeal is AFFIRMED.

OPINION

1. The Rejection under § 112, ¶ 2

"The legal standard for definiteness is whether a claim reasonably apprises those of skill in the art of its scope." *In re Warmerdam*, 33 F.3d 1354, 1361 (Fed. Cir. 1994); *see also Miles Lab., Inc. v. Shandon, Inc.*, 997 F.2d 870, 875 (Fed. Cir. 1993) (If the claims read in light of the specification reasonably apprise those skilled in the art of the scope of the invention, § 112 demands no more). "The degree of precision necessary for adequate claims is a function of the nature of the subject matter." *Id.* If the language is such that a person of ordinary skill in the art could not interpret the metes and bounds of the claim so as to understand how to avoid infringement, a rejection under 35 USC 112, ¶ 2, would be appropriate. *See Morton Int'l, Inc v. Cardinal Chem. Co.,* 5 F. 3d 1464, 1470 (Fed. Circ. 1993).

The Examiner finds that it is not clear what "without interruption of individual casting process" refers to in claim 1 (Ans. 3 and 5). The Examiner also finds: that the claim 1 phrase "losses of a quantity of the light metal in said casting retort" is indefinite; that it is not clear how additional solid light metal is supplied as recited in claims 2, 3; and that it is unclear what "tool device" is referring to in claims 5 and 7 (Ans. 3-5).

The initial burden rests with the Examiner of presenting evidence or reasoning why persons of ordinary skill in the art would not understand the metes and bounds of the claims. We determine that the Examiner has met this initial burden by pointing out that "without interruption of individual casting process" is indefinite, *inter alia*, because it is not defined in the original Specification, and Appellant has failed to explain what this language means in the context of the claimed invention (Br. 9-11). Instead, Appellant's explanation appears to focus on other aspects of the invention, namely, that the invention requires an "automatic tool ventilation."[1] and that there are "material losses" during the casting. We fail to see how Appellant's remarks establish the meaning of "without interruption of individual casting process". Claim 1 recites "performing a production process continuously *without interruption of individual casting process*". The emphasized phrase was added during prosecution. How does this phrase "without interruption of individual casting process" further define "continuously"? It is an ambiguous phrase. At a minimum, it could mean either that each individual casting is done without interruption, or that all the individual castings are done without interruption. Since the Appellant has provided no explanation of this phrase, and the phrase is not used in the Specification, we are constrained to agree with the Examiner that one can not determine the scope of independent claim 1 and concomitantly dependent claims 2-7.

However, the claim 1 phrase "so as to compensate losses of a quantity of the light metal . . ." is discussed in the Appellant's Specification at page 9, and we do not agree with the Examiner that this phrase is

[1] This phrase is not in any claim, nor is it discussed in the Specification.

indefinite. We determine that one of ordinary skill in the art would understand that adding additional metal because of "metal losses in the casting retort" as discussed on Specification page 9 means that the additional metal is added to compensate for losses of the metal during the casting process.

With respect to the language that the Examiner found unclear in dependent claims 2, 3, the Examiner has not explained why he continues to find the language of these claims unclear in light of the application record. On August 1, 2003, Appellant amended the paragraph bridging pages 7 and 8 of the Specification to recite that the supply of solid light metal can be "by means of a sluice device 11". Fig. 1 shows a device numbered 11 and the Specification describes a sluice means at page 5 as well as in numerous originally filed claims (e.g., claims 2, 3, 8, 11). Further comments were provided regarding this feature on page 7 in the September 15, 2004 response. The Examiner stated on page 4 of the non-final rejection of October 7, 2004 that this feature is conventional. Thus, we fail to see how this language can be viewed as indefinite.

With respect to the phrase "tool device" that the Examiner found unclear in dependent in claims 5 and 7, this is original language found in the claims. Appellant appears to be saying that the casting mold 19 is a tool (Br. 11). Furthermore, the translation of the Braun reference (discussed in the "Background of the Invention" section of Appellant's Specification) refers to the mold parts as a "lower tool 14 and an upper tool 16". Thus, one of ordinary skill in the art would know that a "tool device" is merely an alternative word for the "mold device" in the context of this invention. Thus, we conclude that this langauge in claims 5 and 7 is not indefinite.

However, for the foregoing reasons with respect to claim 1, we determine that the Examiner has presented sufficient facts or reasoning to meet the initial burden of proof, and all the claims fall as dependent on claim 1 which we have found to be indefinite. Accordingly, the Examiner's rejection of the claims on appeal under 35 U.S.C. § 112, ¶ 2, for lack of definiteness, is affirmed[2].

2. The Obviousness Rejection under § 103(a)

A preponderance of the evidence of record supports the following Findings of Fact (FF):

1. Braun describes a method of casting wherein the casting process is not interrupted while an individual casting is being produced, since the molten metal (e.g., a magnesium alloy) is supplied via a gas under pressure and at high speed into a preliminarily evacuated mold cavity 18 via vacuum chamber 48 and suction channel 56 (Braun p. 5). Braun further describes that "…all cavities are approximately simultaneously and completely filled with liquid metal." (Braun p. 5). It would not be possible to simultaneously and completely fill a mold cavity with pressurized, high speed, hot liquid metal if the process were interrupted.

2. The Examiner found that Braun discloses a process as claimed in claim 1 except Braun does not specify (1) using a multiple quantity of the liquid metal needed for each light metal casting nor (2) that the heating

[2] Note that dependent claim 4 appears redundant to claim 1's recitation of "selecting a quantity of the supplied liquid light metal to be a multiple…".

means are at a lower end of the molten metal dosing chamber (Ans. 4; Braun pp. 4-5 and the sole figure).

3. Callihan illustrates that it is conventional to provide multiple quantities of molten metal in a casting retort for casting a plurality of castings (Ans. 4; col. 3, ll. 43-46; col. 5, ll. 40-45).

4. Braun describes that the walls of the portioning chamber 36 (i.e., the casting retort) have heating elements therein, as well as the sidewalls and lower wall of the melting crucible 30, and the feed line 34 (Braun p. 4, 2nd full paragraph). Thus, Braun recognizes the desirability of maintaining the metal in a heated molten phase through out the process, including in the retort chamber.

5. It appears from the record that both the Examiner and the Appellant interpret the claimed "lower part of a melting device" to be the lower part of the casting retort chamber (i.e., element 2 at the lower end of element 1 of Appellant's Figs 1-3). If one interprets the claimed "lower part of a melting device" to be the lower part of the retort chamber, Braun only fails to explicitly state that the heating is "in a lower part" of a melting device as required by claim 1.

6. We find that a fair reading of claim 1 also allows one to read the melting crucible 30 of Braun as "a melting device", and thus Braun inherently describes the claimed feature of "heating of the liquid metal in a lower part of a melting device…" (Braun, p. 4, 2nd full paragraph).

7. Jorn, Blum, Muller and Sugiura each exemplify that heating the walls at the lower end of a molten metal dosing or dispensing chamber to

ensure free flow of the molten metal into a casting mold was well known (Ans. 4).

8. One of ordinary level of skill in the art would be an engineer or scientist who designs casting methods and articles as exemplified in the applied references.

9. One of ordinary level of skill in the art would have known that some molten metal will stick to various surfaces while being fed through the system to the casting mold and it would have been prima facie obvious to determine how much molten metal to use to make an acceptable quality metal casting.

Principles of Law

"Section 103 forbids issuance of a patent when 'the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.'" *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1734 (2007). The legal question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, and (3) the level of skill in the art. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). *See also KSR*, 127 S. Ct. at 1734 ("While the sequence of these questions might be reordered in any particular case, the [*Graham*] factors continue to define the inquiry that controls.")

Also, the Supreme Court has held that a "…combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *KSR* 127 S. Ct. at 1739. Furthermore, "[I]f a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill". *KSR* 127 S. Ct. at 1740.

Analysis

Applying the preceding legal principles to the Factual Findings, we determine that the Examiner has established a prima facie case of obviousness that has not been sufficiently rebutted by Appellant.

Appellant's arguments state that the references "do not teach the new features of the present invention as defined in claim 1" (Br. 12 and 15). We disagree. Appellant fails to specify any "new features" in claim 1 that are not taught or rendered obvious by the applied prior art.

Implicit in our review of the Examiner's obviousness analysis is that the claim must first have been correctly construed to define the scope and meaning of each contested limitation. *See Gechter v. Davidson,* 116 F.3d 1454, 1457, 1460 n.3 (Fed. Cir. 1997). During examination proceedings, claims are given their broadest reasonable interpretation consistent with the specification. *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004). Although claims are to be interpreted in light of the specification, limitations from the specification are not to be read into the claims. *See In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993).

Accordingly, for purposes of analyzing the § 103 rejection, we must first construe the disputed term "without interruption of individual casting process" as found in the pertinent clause of claim 1 on appeal. Neither the original claims nor the original Specification used this phrase. However, even though we have determined, for reasons set forth previously, that this is an ambiguous phrase which renders the claims indefinite, we can nonetheless construe it for the purposes of analyzing the prior art rejection to mean that the casting process is not interrupted while an individual casting is being produced (FF 1).[3]

Appellant states "Without the intervention of the operator in the periodic course of the individual casting processes the manufacturing process [of Braun] is not possible." (Br. 13). However, Appellant does not identify any support in Braun for this statement. To the contrary, Braun teaches that the hot molten metal (e.g., a magnesium alloy) is supplied via a gas under pressure and at high speed into a preliminarily evacuated mold cavity 18 via vacuum chamber 48 and suction channel 56, and the molten metal simultaneously and completely fills all cavities (FF 1). The Examiner also found that Braun performs an uninterrupted process (FF 2; Final, p. 4, ¶ b), which the Appellant does not dispute with any reasonable specificity (Br. 12-15).

[3] *See*, *Ex parte Ionescu*, 222 USPQ 537, 540 (Bd. App. 1984) (if a claim is subject to two interpretations and one interpretation would render the claim unpatentable over the prior art, the proper course of action is to enter two rejections: (1) a rejection based on indefiniteness under 35 U.S.C. 112, second paragraph, and (2) a rejection over the prior art based on the interpretation of the claims which renders the prior art applicable.)

As for the claim 1 distinctions found by the Examiner (FF 2), Callihan exemplifies the use of multiple quantities of the liquid metal being available in the retort so as to fill multiple casting molds (FF 3). Braun recognizes the desirability of maintaining the metal in a heated molten phase through out the process, including in the retort chamber (FF 4-6). Although not needed under our interpretation of claim 1 and the Braun reference, the four alternative tertiary references each exemplify the well known use of heating the molten metal at the point of dispensing into the casting mold, namely, at the lower part of a melting device (FF 7).

Appellant's claimed invention appears to be no more than the predictable use of prior art elements/steps (namely, heating molten magnesium metal and applying same via a pressurized gas into a vacuum mold) according to their established functions (namely, to produce a light magnesium metal casting). *See KSR,* 127 S. Ct. at 1739. We determine that it would have been prima facie obvious to a person of ordinary skill to have used "a multiple" quantity of the molten liquid metal in the chamber 36 of Braun in order to take advantage of the known processing advantages of using multiple quantities as taught by the applied prior art (FF 3).

We also determine that one of skill in the art would have found it prima facie obvious to use a quantity of metal sufficient to produce an appropriate casting and make up for any "losses" of the metal associated with the casting process. A person of ordinary skill is also a person of ordinary creativity, not an automaton. *See KSR,* 127 S. Ct. at 1742. We determine that an engineer or scientist would have realized that molten metal will stick to the surfaces of the pipes, chambers, etc. and thus to use "a

multiple" to make up for these losses would have been within the ordinary level of skill in the art (FF 9).

We agree with the Examiner that the differences between Braun and Appellant's claims would have been prima facie obvious, as the use and advantages of multiple quantities of metal to be cast, and heating the molten metal in a lower part of a melting device, were known in the art (Ans. 5-6, 9-10, FF 1-7 and 9). One of ordinary skill in the art would have recognized the use of these known techniques for casting molten metal would have improved the process of Braun. *See KSR,* 127 S. Ct. at 1740.

Thus, we determine that the Examiner has established a reasonable belief that the applied prior art would have suggested the claimed casting process.

CONCLUSION

For the foregoing reasons, we affirm the rejection based on failure to comply with 35 U.S.C. § 112, second paragraph.

For the reasons stated in the Answer and above, we determine that the Examiner has established a prima facie case of obviousness in view of the reference evidence. Therefore, we also affirm the rejection on appeal based upon § 103(a).

DECISION

The Examiner's decision is AFFIRMED.

No time period for taking any subsequent action in connection with this appeal maybe extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

tf/ls/cam

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